

## CLAIMS

What is claimed is:

1. An optical pickup, which is compatible with a first recording medium having a first format and a second recording medium having a second format different from the first format, the optical pickup comprising:

a first light source which emits a first light beam, the first light beam having a wavelength suitable for the first recording medium;

a first photodetector which detects an information signal associated with the first recording medium and based upon the first light beam;

a second light source which emits a second light beam, the second light beam having a wavelength suitable for the second recording medium; and

a second photodetector which detects an information signal associated with the second recording medium and based upon the second light beam,

wherein the first photodetector monitors the amount of light emitted from the second light source by detecting a part of the second light beam that is emitted from the second light source and is incident on the first photodetector through a reflection process, and/or the second photodetector monitors the amount of light emitted from the first light source by detecting a part of a first light beam that is emitted from the first light source and is incident upon the second photodetector through a reflection process.

2. The optical pickup of claim 1, further comprising at least one of:

a first detection circuit which is coupled to the first photodetector and produces a monitoring signal in proportion to the amount of light emitted from the second light source; and

a second detection circuit which is coupled to the second photodetector and produces a monitoring signal in proportion to the amount of light output from the first light source.

3. The optical pickup of claim 1, wherein the first photodetector monitors the amount of light emitted from the second light source by detecting a second light beam that is emitted from the second light source, reflected by a recording medium, and then incident upon the first photodetector, and/or the second photodetector monitors the amount of light output from the first light source by detecting a first light beam that is emitted from the first light source, reflected by the recording medium, and then incident upon the second photodetector.

4. The optical pickup of claim 3, further comprising a plate-type beam splitter transmitting and reflecting each of the first and second light beams at a predetermined ratio.

5. The optical pickup of claim 1, further comprising a reflection element which reflects a portion of each of the first and/or second light beams and is installed on a path common to the first and second light beam emitted from the first and second light source, and the first photodetector monitors the amount of light emitted from the second light source by detecting a second light beam that is emitted from the second light source, reflected by the reflection element, and then incident on the first photodetector, and/or the second photodetector monitors the amount of light emitted from the first light source by detecting a first light beam that is emitted from the first light source, reflected by the reflection element, and incident upon the second photodetector.

6. The optical pickup of claim 5, further comprising a cubic beam splitter which transmits and reflects each of the first and second light beams at a predetermined ratio.

7. The optical pickup of claim 5, wherein the reflection element is formed on a surface of the cubic beam splitter.

8. The optical pickup of claim 1, wherein one of the first and second light sources emits a light beam with a wavelength suitable for recording to and/or reproducing from a CD-family recording medium, and the other one of the first and second light sources emits a light beam with a wavelength suitable for recording to and/or reproducing from a DVD-family recording medium.

9. The optical pickup of claim 8, wherein the compatible optical pickup records an information signal to at least a part of the CD-family recording medium.

10. The optical pickup of claim 8, wherein the compatible optical pickup records an information signal to at least a part of the DVD-family recording medium.

11. The optical pickup of claim 1, wherein the first photodetector detects an error signal associated with the first recording medium and based upon the first light beam, and the second photodetector detects an error signal associated with the second recording medium and based upon the second light beam.

12. An optical pickup comprising:  
a first hologram optical module comprising;  
a first light source which emits a first light beam with a wavelength suitable for a first recording medium,  
a first hologram which changes the path of the first light beam, and  
a first photodetector which receives light reflected by a recording medium; and  
a second hologram optical module comprising;  
a second light source which emits a second light beam with a wavelength suitable for a second recording medium,  
a second hologram which changes the path of the second light beam, and  
a second photodetector, which receives light reflected by a recording medium;  
wherein the first photodetector monitors the amount of light emitted from the second light source by detecting a portion of a second light beam that is emitted from the second light source and incident on the first hologram optical module through a reflection process, and/or the second photodetector monitors the amount of light emitted from the first light source by detecting a portion of a first light beam that is emitted from the first light source and incident upon the second hologram optical module through a reflection process.

13. The optical pickup of claim 12, wherein the wavelength of the first light beam is different than the wavelength of the second light beam.

14. The optical pickup of claim 12, wherein the first recording medium has a first format and the second recording medium has a second format different from the second format.
15. The optical pickup of claim 12, wherein the first light beam is in a red wavelength range.
16. The optical pickup of claim 12, wherein the wavelength of the first light beam is between 645 nm and 685 nm.
17. The optical pickup of claim 12, wherein the second light beam is in an infrared wavelength range.
18. The optical pickup of claim 12, wherein the wavelength of the second light beam is between 770nm and 810nm.
19. The optical pickup of claim 12, wherein the first and second light sources are semiconductor lasers.
20. The optical pickup of claim 12, wherein the optical pickup compatibly adopts DVDs and the first light beam is in a blue wavelength range and the second light beam is in a red wavelength range.
21. The optical pickup of claim 12, wherein each of the first and second holograms serves as a light path conversion device, and the first hologram transmits the first light beam emitted from the first light source without changing a path thereof and diffracts incident first and second light beams in  $\pm$  first order and transmits the  $\pm$  first order diffracted light of the first and second light beams to the first photodetector.
22. The optical pickup of claim 12, wherein the second hologram transmits the second light beam emitted from the second light source without changing a path thereof and diffracts incident first and second light beams in  $\pm$  first order and transmits the  $\pm$  first order diffracted light of the first and second light beams to the second photodetector.

23. The optical pickup of claim 12, wherein the first light source and the first photodetector are separately installed.
24. The optical pickup of claim 12, wherein the second light source and the second photodetector are separately installed.
25. The optical pickup of claim 12, further comprising at least one of:  
a first detection circuit which is coupled to the first photodetector and produces a monitoring signal in proportion to the amount of light emitted from the second light source; and  
a second detection circuit which is coupled to the second photodetector and produces a monitoring signal in proportion to the amount of light emitted from the first light source.
26. The optical pickup of claim 12, wherein at least one of the first detection circuit and second detection circuit comprises an output terminal which outputs monitoring signal.
27. The optical pickup of claim 26, wherein each of the at least one output terminals outputs an information reproduction signal, that is, a radio frequency (RF) signal.
28. The optical pickup of claim 12, wherein each of the at least one output terminals may be a separately added terminal which outputs a monitoring signal with respect to a typical PDIC.
29. The optical pickup of claim 26, wherein each of the first and second detection circuits further comprises a controller.
30. The optical pickup of claim 29, wherein each of the controllers is a variable resistor which controls the amplification rate of a monitoring signal.

31. The optical pickup of claim 12, wherein the first photodetector monitors the amount of light emitted from the second light source by detecting a second light beam that is emitted from the second light source, reflected by a recording medium, and then incident upon the first photodetector, and/or the second photodetector monitors the amount of light emitted from the first light source by detecting a first light beam that is emitted from the first light source, reflected by the recording medium, and then incident upon the second photodetector.

32. The optical pickup of claim 31, further comprising a plate-type beam splitter which transmits and reflects each of the first and second light beams at a predetermined ratio.

33. The optical pickup of claim 12, further comprising a reflection element, wherein the reflection element which reflects a portion of each of the first and/or second light beam is installed on a path common to the first and second light beam emitted from the first and second light source, and the first photodetector monitors the amount of light emitted from the second light source by detecting a second light beam that is emitted from the second light source and is reflected by the reflection element to be incident on the first photodetector, and/or the second photodetector monitors the amount of light emitted from the first light source by detecting a first light beam that is emitted from the first light source and reflected by the reflection element to be incident upon the second photodetector.

34. The optical pickup of claim 33, further comprising a cubic beam splitter which transmits and reflects each of the first and second light beams at a predetermined ratio.

35. The optical pickup of claim 33, wherein the reflection element is installed on a surface of the cubic beam splitter.

36. The optical pickup of claim 33, wherein the reflection element is a coating on a light emission surface of the cubic beam splitter.

37. The optical pickup of claim 12, wherein one of the first and second light sources emits a light beam with a wavelength suitable for at least one of recording and reproducing a CD-family recording medium, and the other one of the first and second light sources emits a light beam with a wavelength suitable for at least one of recording and reproducing a DVD-family recording medium.

38. The optical pickup of claim 37, wherein the compatible optical pickup can record an information signal to at least a part of the CD-family recording medium.

39. The optical pickup of claim 37, wherein the compatible optical pickup can record an information signal to at least a part of the DVD-family recording medium.

40. A method of detecting the amount of light output from at least one of a first and a second light source using an optical pickup which is compatible with a first recording medium and a second recording medium, the first and second recording media having different formats, the optical pickup comprising: a first light source emitting a first light beam with a wavelength suitable for the first recording medium; a first photodetector which detects at least one of an information signal and an error signal associated with the first recording medium; a second light source emitting a second light beam with a wavelength suitable for the second recording medium; and a second photodetector detecting at least one of an information signal and an error signal associated with the second recording medium, the method comprising:

detecting at least one of a portion of a second light beam that is emitted from the second light source and incident on the first photodetector through a reflection process, using the first photodetector, and a part of a first light beam that is emitted from the first light source and incident upon the second photodetector through a reflection process, using the second photodetector; and

producing at least one of a monitoring signal for monitoring the amount of light emitted from the second light source using a signal corresponding to the second light beam detected by the first photodetector, and a monitoring signal for monitoring the amount of light output from the first light source using a signal corresponding to the first light beam detected by the second photodetector.

41. The method of claim 40, wherein one of the first and second light sources emits a light beam with a wavelength suitable for recording and/or reproducing a CD-family recording medium, and the other one of the first and second light sources emits a light beam with a wavelength suitable for recording and/or reproducing a DVD-family recording medium.

42. The optical pickup of claim 40, wherein the first photodetector detects an error signal associated with the first recording medium, and the second photodetector detects an error signal associated with the second recording medium.

43. An optical pickup, which is compatible with a first recording medium having a first format and a second recording medium having a second format different from the first format, the optical pickup comprising:

- a first light module comprising;

- a first light source which emits a first light beam compatible with the first recording medium, and

- a first photodetector, and

- a second light module comprising;

- a second light source which emits a second light beam compatible with the second recording medium, and

- a second photodetector,

wherein the first photodetector detects a first information signal associated with the first recording medium and based on the first light beam and a second light output signal based upon the second light beam, and the second photodetector detects a second information signal associated with the second recording media based on the second light beam and a first light output signal based on the first light beam.

44. The optical pickup of claim 43, wherein the first photodetector detects the first information signal when the second photodetector detects the first light output signal, and the second photodetector detects the second information signal when the first photodetector detects the second light output signal.



45. The optical pickup of claim 43, wherein the first information signal and the second information signal comprise the majority of the first light beam and the second light beam, respectively, and the first light output signal and the second light output signal comprise the minority of the first light beam and the second light beam, respectively.

46. The optical pickup according to claim 43, wherein a strength of the first light beam adjusted based on the first light output signal detected by the second photodetector, and a strength of the second light beam is based on the second light output signal detected by the first photodetector.

47. The optical pickup according to claim 43, further comprising:  
a first detection circuit connected to the first photodetector and the second light source, to control a strength of the second beam based on the second light output signal; and  
a second detection circuit connected to the second photodetector and the first light source, to control a strength of the first light beam based on the first light output signal.

48. The optical pickup according to claim 47, wherein the first detection circuit controls the strength of the second light beam by generating a first control signal to control the second light source, and the second detection controls the strength of the first light beam by generating a second control signal to control the first light source.